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JANUARY 1990 MONTHLY GROUND WATER SAMPLING RESULTS LIVINGSTON RAIL YARD LIVINGSTON, MONTANA

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JANUARY 1990 MONTHLY
GROUND WATER SAMPLING RESULTS
LIVINGSTON RAIL YARD
LIVINGSTON, MONTANA

Submitted To:

Montana Department of Health
and Environmental Sciences
Cogswell Building
Helena, Montana 59620

Submitted By:

Envirocon, Inc.
101 International Way
P.O. Box 8243
Missoula, Montana 59807

Submittal Date:

March 20, 1990

ENVIROCON, INC.

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1.0 INTRODUCTION

Burlington Northern Railroad, through its contractor, Envirocon, Inc., took fifteen samples from ten monitoring wells on the Livingston rail yard and from the B Street Municipal Water Well in the city of Livingston on January 20 and 25, 1990. Two of the fifteen samples were trip blanks and one was a field duplicate. All samples were sent to Energy Laboratories, Inc. in Billings, Montana. All samples were analyzed for purgeable halocarbons (POX) by EPA Method 601 except those from Wells L-87-2, LG-10, and the B Street Well, which were analyzed for volatile organic compounds (VOCs) by EPA Method 524.2. In addition, a sample from Well LG-10 was analyzed for total petroleum hydrocarbons (TPH) by EPA Method 418.1. The well numbers, sample numbers, and sampling methods are shown on Table 1.0. Well locations and summarized analytical results are shown on Figure 1.0. Complete laboratory results are also enclosed in Appendix A.

The Montana Department of Health and Environmental Sciences (MDHES) took two split samples with Envirocon at Well LG-10. The MDHES samples were analyzed for VOCs by EPA Method 502.2 at the MDHES laboratory in Helena, Montana. Results of MDHES split samples are shown in comparison to Envirocon's results on Figure 1.0.

2.0 RESULTS AND INTERPRETATION

The sample results are consistent with previous monthly results, with the only notable concentration changes occurring at Wells LS-8 and LS-11. These changes are summarized below. More complete interpretation of monthly and seasonal variations in organic contaminant concentrations throughout the rail yard will be presented in the February 1990 Quarterly Ground Water Report.

TABLE 1.0

CORRELATION OF WELL AND SAMPLE NUMBERS
Jan-90

SAMPLE NUMBER	WELL NUMBER	ANALYTICAL METHOD*	SAMPLE METHOD	SAMPLE DATE
140101-226	B STREET	524.2 & 418.1	TAP	1/20/90
140101-227	DUP OF B STREET	524.2	TAP	1/20/90
140101-228	LS-8	601	DBP	1/20/90
140101-229	LS-11	601	DBP	1/20/90
140101-230	#7	601	DBP	1/20/90
140101-231	L-88-10	601	DBP	1/20/90
140101-232	L-87-2	524.2	DBP	1/20/90
140101-233	L-87-3	601	DBP	1/20/90
140101-234	#6	601	DBP	1/20/90
140101-235	L-88-13	601	DBP	1/20/90
140101-236	L-87-8	601	DBP	1/20/90
140101-237	TRIP BLANK	601	N/A	1/20/90
140101-238	LG-10	524.2 & 418.1	NDBP	1/25/90
140101-239	EQUIPMENT BLANK	601	N/A	1/25/90
140101-240	TRIP BLANK	601	N/A	1/25/90

NOTES: *Refers to EPA
DBP-Dedicated bladder pump
NDBP-Non-dedicated bladder pump
N/A-Not applicable

Sample results from Wells LS-8 and LS-11 continue to show monthly shifts in VOC concentrations. The DCE concentration at Well LS-8 (cis-1,2-DCE and trans-1,2-DCE combined) increased from 48.2 ppb to 112.4 ppb, while the concentration of chlorobenzene increased from 3.6 ppb to 34 ppb. The results from Well LS-11 show 77 ppb of chlorobenzene, which is an increase from an undetectable chlorobenzene concentration recorded during the December 1989 sample round. Variations at Wells LS-8 and LS-11 have been monitored closely since May 1989 and may be due to factors such as ground water flow directions, precipitation events, and the seasonal rise and fall of the water table.

Envirocon detected 0.2 ppm TPH in the sample from Well LG-10. No detectable concentrations of VOCs were found in Envirocon's sample from this well. The MDHES split samples from Well LG-10 were not analyzed for TPH.

During the January 1990 sample round, Envirocon followed the QA/QC program outlined in the Interim Remedial Measures Work Plan (IRMWP). As shown in the attached laboratory results, no detectable concentrations of any Method 601 analytes were found in the two trip blanks. As shown on Figure 1.0, results of field duplicates taken from the B Street Municipal Water Well match results from the original samples.

The MDHES took two split samples with Envirocon at Well LG-10. One MDHES sample showed no detectable concentrations of any Method 502.2 VOCs, while the duplicate sample showed 0.7 ppb of m+p xylene, as shown on Figure 1.0. Envirocon's sample did not show any detectable concentration of m+p xylene. Based upon these three sample results, the single MDHES result showing m+p xylene may be anomalous. Envirocon resampled Well LG-10 in February 1990 and is analyzing the sample for VOCs (Method 524.2).

APPENDIX A

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WATER ANALYSIS

PROJECT: Livingston / BN

PAGE 1

	B STREET	DUP OF B STREET	L-ST-2
LAB NO.	90-1979	90-1980	90-1981
SAMPLE IDENTIFICATION	140101-226	140101-227	140101-232
DATE REPORTED	02/01/90	02/01/90	02/01/90
SAMPLE SUBMITTED	01/22/90	01/22/90	01/22/90
SAMPLE DATE	01/20/90	01/20/90	01/20/90
SAMPLE TIME	1130	1130	1530
VOLATILE ORGANIC CONSTITUENT	ug/l	ug/l	ug/l
Dichlorodifluoromethane	<1.0	<1.0	<1.0
Chloromethane	<1.0	<1.0	<1.0
Vinyl chloride	<0.50	<0.50	0.85
Bromomethane	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0
Trichlorofluoromethane	<1.0	<1.0	<1.0
1,1-Dichloroethene	<0.50	<0.50	0.50
Methylene Chloride	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	<1.0	<1.0	17
1,1-Dichloroethane	<1.0	<1.0	<1.0
2,2-Dichloropropane	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	<1.0	<1.0	1300
Chloroform	<1.0	<1.0	<1.0
Bromochloromethane	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	<0.50	<0.50	<0.50
Carbon Tetrachloride	<0.50	<0.50	<0.50
1,1-Dichloropropene	<1.0	<1.0	<1.0
Benzene	<0.50	<0.50	<0.50
1,2-Dichloroethane	<0.50	<0.50	<0.50
Trichloroethene	<0.50	<0.50	56
1,2-Dichloropropane	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	<1.0
Dibromomethane	<1.0	<1.0	<1.0
Toluene	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0
Tetrachloroethene	<0.50	<0.50	3.3
1,3-Dichloropropane	<1.0	<1.0	<1.0
Dibromochloromethane	<1.0	<1.0	<1.0
1,2-Dibromoethane	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	127
1,1,1,2-Tetrachloroethane	<1.0	<1.0	<1.0

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DUPLICATE OF B STREET

	Duplicate
LAB NO.	90-1980
SAMPLE IDENTIFICATION	140101-227
DATE REPORTED	02/01/90
SAMPLE SUBMITTED	01/22/90
SAMPLE DATE	01/20/90
SAMPLE TIME	1130
VOLATILE ORGANIC CONSTITUENT	ug/l
Dichlorodifluoromethane	<1.0
Chloromethane	<1.0
Vinyl chloride	<0.50
Bromomethane	<1.0
Chloroethane	<1.0
Trichlorofluoromethane	<1.0
1,1-Dichloroethene	<0.50
Methylene Chloride	<1.0
trans-1,2-Dichloroethene	<1.0
1,1-Dichloroethane	<1.0
2,2-Dichloropropane	<1.0
cis-1,2-Dichloroethene	<1.0
Chloroform	<1.0
Bromochloromethane	<1.0
1,1,1-Trichloroethane	<0.50
Carbon Tetrachloride	<0.50
1,1-Dichloropropene	<1.0
Benzene	<0.50
1,2-Dichloroethane	<0.50
Trichloroethene	<0.50
1,2-Dichloropropane	<1.0
Bromodichloromethane	<1.0
Dibromomethane	<1.0
Toluene	<1.0
1,1,2-Trichloroethane	<1.0
Tetrachloroethene	<0.50
1,3-Dichloropropane	<1.0
Dibromochloromethane	<1.0
1,2-Dibromoethane	<1.0
Chlorobenzene	<1.0
1,1,1,2-Tetrachloroethane	<1.0

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Quality Assurance Spiked Analysis

CONSTITUENT	SPIKE AMOUNT ug/l	P (%)	RANGE FOR P (%)
Bromochloromethane	5.0	125	60-140
Chloroform	5.0	120	60-140
Carbon Tetrachloride	5.1	101	60-140
Trichloroethene	5.0	103	60-140
1,2-Dibromoethane	5.0	88	60-140
1,1,1,2-Tetrachloroethane	4.9	112	60-140
Tetrachloroethene	5.0	88	60-140
1,2-Dibromo-3-Chloropropane	5.0	94	60-140
1,3-Dichlorobenzene	5.0	97	60-140

P = percent recovery measured.

NOTE: Lab no. 90-1981 was spiked
with the above constituents
with these results.

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WATER ANALYSIS

	LS-8	LS-11	#7
LAB NO.	90-1982	90-1983	90-1984
SAMPLE IDENTIFICATION	140101-228	140101-229	140101-230
DATE REPORTED	02/01/90	02/01/90	02/01/90
SAMPLE SUBMITTED	01/22/90	01/22/90	01/22/90
SAMPLE DATE	01/20/90	01/20/90	01/20/90
SAMPLE TIME	1245	1335	1415
Purgeable Organics (EPA Method 601)	ug/l	ug/l	ug/l
Bromodichloromethane	<1.0	<1.0	<1.0
Bromoform	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0
Carbon tetrachloride	<0.50	<0.50	<0.50
Chlorobenzene	34	77	<1.0
Chloroethane	<1.0	<1.0	<1.0
2-Chloroethylvinyl ether	<1.0	<1.0	<1.0
2-Chlorotoluene	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0
Chloromethane	<1.0	<1.0	<1.0
Dibromochloromethane	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	3.4	18	<0.50
1,1-Dichloroethane	<1.0	<1.0	<1.0
1,2-Dichloroethane	<0.50	<0.50	<0.50
1,1-Dichloroethene	<0.50	<0.50	<0.50
cis-1,2-Dichloroethene	110	89	<1.0
trans-1,2-Dichloroethene	2.4	3.5	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	<1.0	<1.0	<1.0
Methylene chloride	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0
Tetrachloroethene	128	73	3.8
1,1,1-Trichloroethane	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	<1.0	<1.0	<1.0
Trichloroethene	22	18	<0.50
Trichlorofluoromethane	<1.0	<1.0	<1.0
Vinyl chloride	<0.50	<0.50	<0.50
Dichlorodifluoromethane	<1.0	<1.0	<1.0

cc: Envirocon, Livingston.

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WATER ANALYSIS

	L-88-10	L-87-3	#6
LAB NO.	90-1985	90-1986	90-1987
SAMPLE IDENTIFICATION	140101-231	140101-233	140101-234
DATE REPORTED	02/01/90	02/01/90	02/01/90
SAMPLE SUBMITTED	01/22/90	01/22/90	01/22/90
SAMPLE DATE	01/20/90	01/20/90	01/20/90
SAMPLE TIME	1450	1620	1700
Purgeable Organics (EPA Method 601)	ug/l	ug/l	ug/l
Bromodichloromethane	<1.0	<1.0	<1.0
Bromoform	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0
Carbon tetrachloride	<0.50	<0.50	<0.50
Chlorobenzene	38	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0
2-Chloroethylvinyl ether	<1.0	<1.0	<1.0
2-Chlorotoluene	1.6	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0
Chloromethane	<1.0	<1.0	<1.0
Dibromochloromethane	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	1.7	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	2.5	<0.50	<0.50
1,1-Dichloroethane	<1.0	<1.0	<1.0
1,2-Dichloroethane	<0.50	<0.50	<0.50
1,1-Dichloroethene	<0.50	<0.50	<0.50
cis-1,2-Dichloroethene	369	88	<1.0
trans-1,2-Dichloroethene	3.5	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	<1.0	<1.0	<1.0
Methylene chloride	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0
Tetrachloroethene	209	204	2.7
1,1,1-Trichloroethane	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	<1.0	<1.0	<1.0
Trichloroethene	26	19	<0.50
Trichlorofluoromethane	<1.0	<1.0	<1.0
Vinyl chloride	<0.50	<0.50	<0.50
Dichlorodifluoromethane	<1.0	<1.0	<1.0

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WATER ANALYSIS

	L-88-13	L-87-9	TRIP BLANK
LAB NO.	90-1988	90-1989	90-1990
SAMPLE IDENTIFICATION	140101-235	140101-236	140101-237
DATE REPORTED	02/01/90	02/01/90	02/01/90
SAMPLE SUBMITTED	01/22/90	01/22/90	01/22/90
SAMPLE DATE	01/20/90	01/20/90	01/20/90
SAMPLE TIME	1745	1820	
Purgeable Organics (EPA Method 601)	ug/l	ug/l	ug/l
Bromodichloromethane	<1.0	<1.0	<1.0
Bromoform	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0
Carbon tetrachloride	<0.50	<0.50	<0.50
Chlorobenzene	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0
2-Chloroethylvinyl ether	<1.0	<1.0	<1.0
2-Chlorotoluene	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0
Chloromethane	<1.0	<1.0	<1.0
Dibromochloromethane	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<0.50	<0.50	<0.50
1,1-Dichloroethane	<1.0	<1.0	<1.0
1,2-Dichloroethane	<0.50	<0.50	<0.50
1,1-Dichloroethene	<0.50	<0.50	<0.50
cis-1,2-Dichloroethene	13	6.1	<1.0
trans-1,2-Dichloroethene	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	<1.0	<1.0	<1.0
Methylene chloride	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0
Tetrachloroethene	55	31	<0.50
1,1,1-Trichloroethane	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	<1.0	<1.0	<1.0
Trichloroethene	11	12	<0.50
Trichlorofluoromethane	<1.0	<1.0	<1.0
Vinyl chloride	<0.50	<0.50	<0.50
Dichlorodifluoromethane	<1.0	<1.0	<1.0

cc: Envirocon, Livingston.

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PROJECT: Livingston / BN

WATER ANALYSIS

TRIP BLANK

	Duplicate
LAB NO.	90-1990
SAMPLE IDENTIFICATION	140101-237
DATE REPORTED	02/01/90
SAMPLE SUBMITTED	01/22/90
SAMPLE DATE	01/20/90
SAMPLE TIME	
Purgeable Organics (EPA Method 601)	ug/l
Bromodichloromethane	<1.0
Bromoform	<1.0
Bromomethane	<1.0
Carbon tetrachloride	<0.50
Chlorobenzene	<1.0
Chloroethane	<1.0
2-Chloroethylvinyl ether	<1.0
2-Chlorotoluene	<1.0
Chloroform	<1.0
Chloromethane	<1.0
Dibromochloromethane	<1.0
1,2-Dichlorobenzene	<1.0
1,3-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<0.50
1,1-Dichloroethane	<1.0
1,2-Dichloroethane	<0.50
1,1-Dichloroethene	<0.50
cis-1,2-Dichloroethene	<1.0
trans-1,2-Dichloroethene	<1.0
1,2-Dichloropropane	<1.0
cis-1,3-Dichloropropene	<1.0
trans-1,3-Dichloropropene	<1.0
Methylene chloride	<1.0
1,1,2,2-Tetrachloroethane	<1.0
Tetrachloroethene	<0.50
1,1,1-Trichloroethane	<0.50
1,1,2-Trichloroethane	<1.0
Trichloroethene	<0.50
Trichlorofluoromethane	<1.0
Vinyl chloride	<0.50
Dichlorodifluoromethane	<1.0

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EPA WATER SUPPLY QUALITY
CONTROL SAMPLE

Volatile Organic Contaminants

PROJECT: Livingston / BN

PARAMETER	True Value, ug/l	P (%)	Range for P (%)
Bromochloromethane	5.0	108	60-140
Chloroform	5.0	112	60-140
Carbon Tetrachloride	5.1	94	60-140
Trichloroethene	5.0	106	60-140
1,2-Dibromoethane	5.0	88	60-140
1,1,1,2-Tetrachloroethane	4.9	80	60-140
Tetrachloroethene	5.0	76	60-140
1,2-Dibromo-3-chloropropane	5.0	106	60-140
1,3-Dichlorobenzene	5.0	115	60-140

P = Percent recovery measured.

This EPA Quality Control sample was analyzed with your
lab no.s 90-1982 thru 90-1990 with the above results.

cc: Envirocon, Livingston.

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WATER ANALYSIS

PROJECT: Livingston / BN

LG-1C

LAB NO.	90-2203
SAMPLE IDENTIFICATION	140101-238
DATE REPORTED	02/08/90
SAMPLE SUBMITTED	01/26/90
SAMPLE DATE	01/25/90
SAMPLE TIME	0940
VOLATILE ORGANIC CONSTITUENT	ug/l
Dichlorodifluoromethane	<1.0
Chloromethane	<1.0
Vinyl chloride	<0.50
Bromomethane	<1.0
Chloroethane	<1.0
Trichlorofluoromethane	<1.0
1,1-Dichloroethene	<0.50
Methylene Chloride	<1.0
trans-1,2-Dichloroethene	<1.0
1,1-Dichloroethane	<1.0
2,2-Dichloropropane	<1.0
cis-1,2-Dichloroethene	<1.0
Chloroform	<1.0
Bromochloromethane	<1.0
1,1,1-Trichloroethane	<0.50
Carbon Tetrachloride	<0.50
1,1-Dichloropropene	<1.0
Benzene	<0.50
1,2-Dichloroethane	<0.50
Trichloroethene	<0.50
1,2-Dichloropropane	<1.0
Bromodichloromethane	<1.0
Dibromomethane	<1.0
Toluene	<1.0
1,1,2-Trichloroethane	<1.0
Tetrachloroethene	<0.50
1,3-Dichloropropane	<1.0
Dibromochloromethane	<1.0
1,2-Dibromoethane	<1.0
Chlorobenzene	<1.0
1,1,1,2-Tetrachloroethane	<1.0

cc: Envirocon, Livingston.

ENERGY LABORATORIES, INC.
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800-873-5227

LG-1C

LAB NO.	90-2203
SAMPLE IDENTIFICATION	140101-238
DATE REPORTED	02/08/90
SAMPLE SUBMITTED	01/26/90
SAMPLE DATE	01/25/90
SAMPLE TIME	0940
VOLATILE ORGANIC CONSTITUENT	ug/l
Ethylbenzene	<1.0
p-Xylene	<1.0
m-Xylene	<1.0
o-Xylene	<1.0
Styrene	<1.0
Bromoform	<1.0
Isopropylbenzene	<1.0
1,1,2,2-Tetrachloroethane	<1.0
Bromobenzene	<1.0
1,2,3-Trichloropropane	<1.0
n-Propylbenzene	<1.0
2-Chlorotoluene	<1.0
1,3,5-Trimethylbenzene	<1.0
4-Chlorotoluene	<1.0
tert-Butylbenzene	<1.0
1,2,4-Trimethylbenzene	<1.0
sec-Butylbenzene	<1.0
p-Isopropyltoluene	<1.0
1,3-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<0.50
n-Butylbenzene	<1.0
1,2-Dichlorobenzene	<1.0
1,2-Dibromo-3-Chloropropane	<1.0
1,2,4-Trichlorobenzene	<1.0
Hexachlorobutadiene	<1.0
Naphthalene	<1.0
1,2,3-Trichlorobenzene	<1.0
cis-1,3-Dichloropropene	<1.0
trans-1,3-Dichloropropene	<1.0

REMARKS: Sample was properly preserved and in specified container.
Sample was analyzed in accordance with EPA method 524.2.

cc: Envirocon, Livingston

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800-873-5227

ENVIROCON
PO BOX 8243
MISSOULA MT 59807

LAB NO.: 90-2203
DATE: 02/09/90

LG-1C

WATER ANALYSIS

Livingston/BN
140101-238
Sampled 01/25/90 @ 0940
Submitted 01/26/90

Total Petroleum Hydrocarbons	0.2 mg/l

cc: Envirocon, Livingston.

ENERGY LABORATORIES, INC.
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800-873-5227

ENVIROCON
PO BOX 8243
MISSOULA MT 59807

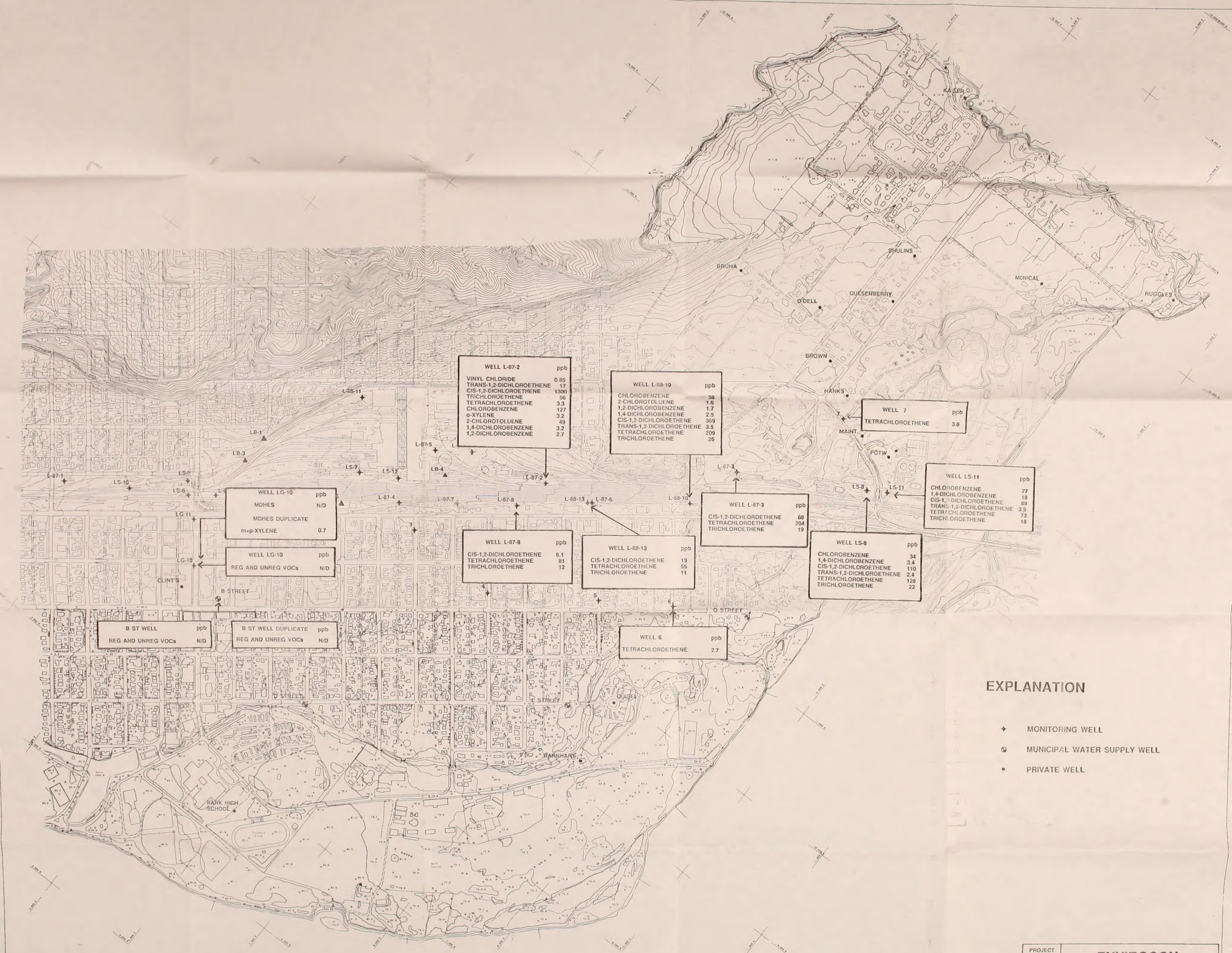
PROJECT: Livingston / BN

WATER ANALYSIS

	EQUIPMENT BLANK	TRIP BLANK
LAB NO.	90-2204	90-2205
SAMPLE IDENTIFICATION	140101-239	140101-240
DATE REPORTED	02/08/90	02/08/90
SAMPLE SUBMITTED	01/26/90	01/26/90
SAMPLE DATE	01/25/90	01/25/90
SAMPLE TIME	1115	1145
Purgeable Organics (EPA Method 601)	ug/l	ug/l
Bromodichloromethane	<1.0	<1.0
Bromoform	<1.0	<1.0
Bromomethane	<1.0	<1.0
Carbon tetrachloride	<0.50	<0.50
Chlorobenzene	<1.0	<1.0
Chloroethane	<1.0	<1.0
2-Chloroethylvinyl ether	<1.0	<1.0
2-Chlorotoluene	<1.0	<1.0
Chloroform	15	<1.0
Chloromethane	<1.0	<1.0
Dibromochloromethane	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0
1,4-Dichlorobenzene	<0.50	<0.50
1,1-Dichloroethane	<1.0	<1.0
1,2-Dichloroethane	<0.50	<0.50
1,1-Dichloroethene	<0.50	<0.50
cis-1,2-Dichloroethene	<1.0	<1.0
trans-1,2-Dichloroethene	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0
cis-1,3-Dichloropropene	<1.0	<1.0
trans-1,3-Dichloropropene	<1.0	<1.0
Methylene chloride	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0
Tetrachloroethene	<0.50	<0.50
1,1,1-Trichloroethane	<0.50	<0.50
1,1,2-Trichloroethane	<1.0	<1.0
Trichloroethene	<0.50	<0.50
Trichlorofluoromethane	<1.0	<1.0
Vinyl chloride	<0.50	<0.50
Dichlorodifluoromethane	<1.0	<1.0

cc: Envirocon, Livingston.

FIGURE 1.0


WELL L-87-2 ppb
VINYL CHLORIDE 0.85
TRANS-1,2-DICHLOROETHENE 17
CIS-1,2-DICHLOROETHENE 1300
TRICHLOROETHENE 56
TETRACHLOROETHENE 3.3
CHLOROBENZENE 127
o-XYLENE 3.2
2-CHLOROTOLUENE 49
1,4-DICHLOROBENZENE 3.2
1,2-DICHLOROBENZENE 2.7
WELL L-88-10 ppb
CHLOROBENZENE 38
2-CHLOROTOLUENE 1.6
1,2-DICHLOROBENZENE 1.7
1,4-DICHLOROBENZENE 2.5
CIS-1,2-DICHLOROETHENE 369
TRANS-1,2-DICHLOROETHENE 3.5
TETRACHLOROETHENE 209
TRICHLOROETHENE 26
WELL 7 ppb
TETRACHLOROETHENE 3.8
WELL LS-11 ppb
CHLOROBENZENE 77
1,4-DICHLOROBENZENE 18
CIS-1,2-DICHLOROETHENE 89
TRANS-1,2-DICHLOROETHENE 3.5
TETRACHLOROETHENE 73
TRICHLOROETHENE 18
WELL LG-10 ppb
MDHES N/D
MDHES DUPLICATE
m+p-XYLENE 0.7
WELL LG-10 ppb
REG AND UNREG VOCs N/D
WELL L-87-3 ppb
CIS-1,2-DICHLOROETHENE 88
TETRACHLOROETHENE 204
TRICHLOROETHENE 19
WELL L-87-8 ppb
CIS-1,2-DICHLOROETHENE 6.1
TETRACHLOROETHENE 81
TRICHLOROETHENE 12
WELL L-88-13 ppb
CIS-1,2-DICHLOROETHENE 13
TETRACHLOROETHENE 55
TRICHLOROETHENE 11
WELL LS-8 ppb
CHLOROBENZENE 34
1,4-DICHLOROBENZENE 3.4
CIS-1,2-DICHLOROETHENE 110
TRANS-1,2-DICHLOROETHENE 2.4
TETRACHLOROETHENE 128
TRICHLOROETHENE 22
WELL 6 ppb
TETRACHLOROETHENE 2.7
B ST WELL ppb
REG AND UNREG VOCs N/D
B ST WELL DUPLICATE ppb
REG AND UNREG VOCs N/D
KAISER
SHULINS
BRUHA
MONICAL
QUESENBERRY
O'DELL
RUGGLES
BROWN
HANKS
MAINT.
POTW
CLINT'S
B STREET
Q STREET
D STREET
I STREET
QUIGLEY
BARNHART
PARK HIGH SCHOOL
L-88-11
LB-1
LB-3
LB-4
L-87-5
L-87-1
LS-10
LS-9
LS-6
LS-7
LS-12
L-87-4
L-87-7
L-87-8
L-88-13
L-87-6
L-88-10
L-87-2
L-87-3
LS-8
LS-11
LG-11
LG-10
EXPLANATION
MONITORING WELL
MUNICIPAL WATER SUPPLY WELL
PRIVATE WELL
LEGEND
HORIZONS, INC.
LIVINGSTON RAIL YARD
FOR
ENVIROCON, INC.
Missoula, Montana
SCALE IN FEET
400 0 400 800
PROJECT NO. 140101
DATE
REVISION
ENVIROCON
FIGURE 1.0
JANUARY 1990
MONTHLY GROUND WATER
SAMPLE RESULTS
LIVINGSTON RAIL YARD
LIVINGSTON, MONTANA